

## Bioterrorism: the Basic Concept

A zoonotic disease, a disease transmissible between animals and humans, introduced by a terrorist could have a devastating impact on human life, the animal community and our economy.

In some diseases, clinical signs may appear in animals prior to humans. Pets in particular can act as important sentinels.



Government agencies, livestock and companion animal owners, handlers and veterinarians play an important role in early detection. Recognizing those signs, responding quickly and appropriately might prevent a catastrophe.

## WHY AGRO-TERRORISM OR BIO-TERRORISM :

- Susceptible civilian populations
- High morbidity and mortality
- Make Americans aware of their vulnerabilities
- Create skepticism that government can protect American Interests
- Difficult to detect release
- Dissemination may cover a large area
- Possible secondary spread (contagion), domestic animal to humans, domestic animals to wildlife, human to human transmission
- Recognition of agent may be delayed days to weeks, long incubation period
- Perpetrators long gone



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# BIOTERRORISM and ANIMALS



# Awareness and Response

Graphic courtesy of Daniel Vasquez, CA

## Animals as Sentinels

Since 1916, when canaries were brought into coal mines, alerting miners that deadly gases were present, animals have served an important sentinel role. Today many states across the country employ sentinel flocks, alerting public health officials to the presence of viral agents that are transmitted by mosquitoes, such as West Nile and Eastern Equine Encephalitis.

With clinical signs more likely to appear in animals before symptoms present in humans, companion animals, domestic livestock and wildlife may well be our bioterrorism early warning system.

Anyone who lives with or cares for animals should be aware that recognizing something unusual is occurring with their animals, and responding appropriately, will not only protect their animals, but also their families and their communities.

## Biologic Warfare Agents

The Center for Disease Control (CDC), an agency within the US Department of Health and Human Services has designated eighteen biological agents or diseases as the most likely biowarfare agents, sixteen are zoonotic diseases, transmissible between animals and humans.

Biowarfare programs have developed mechanisms that alter characteristics of a particular virus or bacteria to make it a more effective weapon. Weaponization may include: making the pathogen transmissible through alternative routes, increasing the pathogen's virulence, enhancing its resistance to antibiotics or anti-viral agents, enabling the pathogen to evade vaccine protection, altering its clinical signs or symptoms, and increasing species susceptibility.

The potential Biological Warfare Agents as designated by the CDC are:

Category A: Anthrax, Botulinum Toxin, Plague, Small Pox, Tularemia and Viral Hemorrhagic Fevers.

Category B: Brucellosis, Glanders, Melioidosis, Psittacosis, Q Fever, Typhus Fever, Viral Encephalitis, Toxins, Food and Water Safety Threats.

Category C: Nipah Virus and Hanta Virus.

## Hallmark Syndromes

While the Department of Agricultural Resources does not expect individuals to recognize specific diseases in animals, we are asking you to be aware of particular clinical signs or a group of clinical signs that may be alert that something unusual is occurring with your animals.

Those Hallmark Syndromes are:

- Sudden/unexplained Death
- Blisters or, vesicular/ulcerated lesions on the skin or mucous membranes
- Bloody diarrhea, severe and persistent
- Neurological signs – paralysis or convulsions
- Acute respiratory signs/symptoms with fever
- High fever with swollen lymph nodes
- High fever over 104.5°
- Abortion in last trimester, primarily livestock.

## The Role for Animal Owners or Care-Givers

- Establish a relationship with a local veterinarian before an incident occurs
- Seek veterinary care promptly when an animal becomes ill
- Isolate sick animals
- If you are ill – and your animals as well – let your physician know
- Keep immunization and health records readily available
- Know your municipal animal inspector and/or animal control officer
- Familiarize yourself with the local animal disaster/emergency plan
- If your community doesn't have a plan, work with local officials to organize one
- Cooperate with the health officials and safety officers
- Have your contact numbers readily available

## If Bioterrorism is Suspected

- Stay informed and remain calm
- Response is event specific
- Response is everyone's responsibility
- Follow the advice of public health officials
- Follow federal and state laws, regulations and guidelines
- Movement restrictions may be necessary

## History of Bioterrorism

**Anthrax** research for use as a biological warfare agent began more than 80 years ago. In 1979 there was an accidental release in Sverdlovsk, Russia, alerting the world that although the former Soviet Union, along with 21 other nation states had signed an international compact stating that the biowarfare programs would be dismantled and stocks of biologic agents would be destroyed. Iraq, in 1995, acknowledged producing and weaponizing B anthracis. A 2001 analysis reports that there is clear evidence of offensive biological weapons programs in at least 13 countries. In 2001 an anthrax assault through the US Postal Service was responsible for twenty-two cases, five fatalities; the culprit has not yet been found.

**Botulism** research for use as a biological warfare agent began more than 60 years. The Japanese fed cultures to prisoners during the 1930's Manchurian occupation. Aerosols were dispersed at multiple sites in downtown Tokyo and US military sites in Japan on at least 3 occasions between 1990-1995 by Aum Shrinrikyo.

**Plague**-infected fleas were dropped by the Japanese over populated areas of China during WWII. Both the US and the former Soviet Union, during the Cold War developed direct plague aerosolization.

**Tularemia** exposure, affecting tens of thousands Soviet and German soldiers on the eastern European front during WWII is believed to have been caused by the former Soviet Union. Following WWII parallel efforts by the US and Soviet Union resulted in weaponization of *F tularensis* strains engineered to be resistant to antibiotics and vaccines.

Biological warfare can be documented as far back as 300 BC. Long before people understood what bacteria and viruses were, enemies knew that if they left dead, decaying bodies of fallen comrades beside enemy food and water supplies they would spread disease. The above are just a few examples of more contemporary biologic warfare.

